

NSDI FRAMEWORK

MAY 2007

The National Spatial Data Infrastructure (NSDI) is a means to assemble geographic data nationwide to serve a variety of users. The framework is one of the key building blocks and forms the data backbone of the NSDI. The framework concept was developed by representatives of county, regional, State, Federal, and other organizations under the auspices of the Federal Geographic Data Committee (FGDC).

Framework has three parts:

- Data
- Procedures and technology for building and using the data
- Institutional relationships and business practices that support the environment

Data

Seven data themes that have been identified as critical for many geospatial applications are known as framework data. These data themes are geodetic control, orthoimagery, elevation and bathymetry, transportation, hydrography, cadastral, and governmental units.

Framework data are designed to facilitate production and use of geographic data, reduce operating costs, and improve service and decision making. Geographic data are essential to many operations, but they are expensive and time-consuming to produce. Many organizations need the same basic geographic data for their applications and spend precious resources duplicating the same data sets. Others go without data because they cannot afford the production costs. Furthermore, when an application or problem covers more than one jurisdiction, it is often difficult to find and combine existing data. The framework meets these needs by providing a reliable, standardized source for commonly used geographic data themes.

The framework concept is being incorporated into many geospatial activities. For example, *The National Map* from the U.S. Geological Survey incorporates framework concepts for its development as a consistent base for geographic knowledge needed by the Nation, and provides key content to the

NSDI. Its goal is to provide public access to high quality geospatial data and information from multiple partners to support decision making by resource managers and the public. *The National Map* is the product of a consortium of Federal, State, and local partners who provide geospatial data to enhance America's ability to access, integrate, and apply geospatial data at global, national, and local scales. It includes many of the framework themes and shares the goal of building the NSDI with FGDC and many others.

Framework Data Content Standard

The Geographic Information Framework Data Content Standard, known as the "Framework Data Content Standard," establishes common data requirements for the exchange of NSDI framework data. The purpose of the standard is to decrease the costs of acquiring, exchanging, and maintaining framework data for creators and users through establishment of a minimal set of data content elements and a common means of describing data content.

The standard addresses the seven framework data themes and provides a data content and high level Unified Modeling Language (UML) description for each data theme. The standard has eight major parts, one for each of the seven data themes and a base standard containing information common to two or more themes. The transportation part has subparts for road, rail, and transit networks, navigable waterways, and airport facilities.

The Framework Data Content Standard will improve and promote efficient data exchange among Federal, State, Tribal, local, and other governmental entities, as well as with the private sector and academic communities. The private sector, specifically software developers, data creators, and vendors, will benefit by developing tools that exploit data based on this standard. Using this standard will decrease costs of acquiring and exchanging framework data through the common means of describing data content.

The increasing need to coordinate collection of new data, identify applicability of existing data, and

exchange data at the national level led to the submission of this standard to the American National Standards Institute (ANSI) process to become an American National Standard. The national standard is sponsored by Technical Committee L1, Geographic Information Systems, of the InterNational Committee for Information Technology Standards (INCITS). INCITS is accredited by, and operates under rules approved by, ANSI.

ANSI-sponsored public review closed April 30, 2007. Once issues from this review are resolved, INCITS boards will advance this standard for approval as an American National Standard.

Technical and Operational Context

The framework has the following technical aspects:

- Feature-based data model
- Permanent, unique feature identification codes
- Reference to modern horizontal and vertical geodetic datums
- Seamlessly integrated data for adjacent or overlapping geographic areas
- Metadata

The framework has the following operational aspects:

- Transactional changes
- Access to past versions
- Access to framework data through the Geospatial One Stop portal, www.geodata.gov

Institutional Context

Innovative institutional arrangements ensure a robust and well-maintained framework. Ideally, the framework data for a geographic area will be developed, maintained, and integrated by the organizations that produce and make use of data for that area. In addition, there is a need to ensure that the framework data can be integrated to support applications for different geographic areas. Initial framework efforts show that the following functions are critical to successful framework efforts:

- Executive guidance, to provide vision and direction for framework development
- Data development, maintenance, and integration, to create, integrate, and update framework data
- Coordination, to ensure that the contributions of

organizations work together and encourage productive relationships among participants

- Data management, to ensure the continued viability of framework data through standards, data security, and disaster recovery
- Data access, to enable users to obtain framework data
- Resource management, to estimate income and expenses, obtain resources, and provide logistical support
- Measures, to monitor users' satisfaction and to provide market analysis

The framework will be continually improved and maintained. Because the framework will be owned by its participants, efforts are concentrated on increasing participation. As more participants use and contribute to the framework, their input will further refine its structure. It will continue to grow as the data and participants change. Over time, the Framework will become more complete, contain increasing amounts of large-scale data, and become more transaction-driven.

More on Framework

There are geospatial data-sharing and framework activities throughout the country. Contact the FGDC to learn more about these activities. You may be able to work with some of these groups to develop framework activities in your area.

The FGDC supports demonstration projects, hosts discussions of issues, and provides guidance for framework development. For more information about framework activities, please visit the FGDC Web site at www.fgdc.gov or contact:

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